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Cooperative State
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Animal Health Science Research Advisory Board

1989 Annual Report

ANIMAL HEALTH SCIENCE RESEARCH ADVISORY BOARD

1989 ANNUAL REPORT

Cooperative State Research Service

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CONTENTS

EXECUTIVE SUMMARY

The Animal Health Science Research Advisory Board (AHSRAB) was established by Public Law 95-113, the Food and Agriculture Act of 1977, to advise the Secretary of Agriculture on the implementation and priorities of animal health research authorized by the act. This includes two programs -- Section 1433, the Animal Health and Disease Formula Research Program, and Section 1414 (c)(1), Special Research Grants for Animal Health. Both programs are administered by the USDA Cooperative State Research Service (CSRS) and have received appropriations over 11 consecutive years (fiscal years 1979-89). The AHSRAB has provided consultation and advice essential to the implementation of these programs.

New research under these programs was initiated in Colleges and Schools of Veterinary Medicine, in State Agricultural Experiment Stations, and in other cooperating institutions. Currently, research projects aimed at providing solutions to food animal health problems are being conducted under the Animal Health and Disease Formula Research program. Under the Special Research Grants Program, 710 projects have been selected competitively for funding from 4,682 proposals submitted by scientists over a 10-year period. Many of these funded projects are still in progress.

This report summarizes the current status of animal health research programs under Section 1433 and Special Research Grants and the 1988 recommendations and actions of the AHSRAB.

The Animal Health Science Research Advisory Board recommended that:

1. The U.S. Department of Agriculture (USDA) administration consider structuring the peer review panels based on disease entity for the Animal Health Special Research Grants Program. It is suggested that four review panels of at least 10 individuals each be constituted to cover:

    A. Respiratory diseases in all species
    B. Reproductive diseases in all species
    C. Enteric and parasitic diseases and mastitis in all species
    D. Metabolic, musculoskeletal, and immunologic diseases in all species

2. The basis for the allocation of Animal Health Special Research Grants funds for each commodity area be systematically evaluated on a yearly basis to ensure that funds are being most effectively utilized for the highest priority animal health problems.

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1989 ANNUAL REPORT

Current Concerns in Animal Health

Losses from food animal diseases are estimated to be 18-20 percent of the $70 billion gross income from animals each year. This touches every person in this Nation, rich or poor, since it adds to the first-dollar-cost of food.

Research is urgently needed to solve problems that cause inefficient production and reduced productivity. The emphasis is no longer on pounds and numbers but on quality and efficiency of use of capital inputs including labor, equipment, feed, facilities, land, drugs, and antibiotics and other high-cost chemicals.

Today, more than ever before, the consumer is questioning the quality and safety of our animal food chain. We must develop technologies to provide a safer and higher quality animal food source. Improved food safety and quality through enhanced animal health must be a driving emphasis in our research.

Previously unimaginable improvements in production efficiency are now possible through application of "cutting edge" technologies of molecular biology and computer-assisted systems. If these can be brought to bear on the problems in animal health and diseases facing the livestock and poultry industries today, tomorrow will surely bring solutions that have been evading researchers for decades.

The Food and Agriculture Act of 1977 (PL 95-113) recognized significant research opportunities to increase livestock production efficiency and food safety through emphasis on solving animal health problems.

Two extramural programs were initiated that provide USDA support for animal health and disease research under authorizations of PL 95-113. These are the Animal Health and Disease Formula Research Program (Section 1433) and the Animal Health Special Research Grant Program (Section 1414 (c)(1) amending Public Law 89-106). Provisions of these authorizations for animal health research were further strengthened under amendments included in Public Law 97-98, the Agriculture and Food Act of 1981, and Public Law 99-198, the Food Security Act of 1985. The U.S. Department of Agriculture Appropriation Act for fiscal years 1979-89 provided funds to carry out animal health research provisions of Public Laws 95-113 and 99-198 at levels indicated in table 1.

Status of Programs

Animal Health and Disease Formula Research Program (Section 1433)

Program Objectives

The Animal Health and Disease Formula Research Program is directed toward improving the health and productivity of animals and the welfare of producers and consumers of animal products; protecting human health through control of animal disease transmissible to humans; minimizing livestock and poultry losses due to transportation and handling; facilitating the effective treatment and prevention of food animal and horse diseases; protecting livestock and poultry from diseases of wildlife; and providing improved methods of controlling birth of predators and other animals.

Approach

Under the Section 1433 formula program the USDA has been able to strengthen its animal health research partnership with the State Agricultural Experiment Stations and to extend this partnership to all Colleges and Schools of Veterinary Medicine. Provisions of Sections 1433 are unique in that funds are distributed to the States in relation to each State's livestock importance and its capacity to conduct animal health and disease research. When more than one eligible institution exists within a State, the State's entitlement is distributed to these institutions in accordance with their animal health research capacities. State contributions to expand animal health research are encouraged through a requirement that each State match any Section 1433 funds received annually in excess of $100,000.

Formula Provisions

Section 1433 provides for support of livestock and poultry disease research in Colleges of Veterinary Medicine and in eligible State Agricultural Experiment Stations. These funds are distributed as follows:

. Forty-eight percent are distributed in an amount proportionate to the value of and income to producers from domestic livestock and poultry in each State, relative to the total value of and income to producers from domestic livestock and poultry in all States.

	Percent
Livestock Value (USDA-Data)	24
Livestock Income (USDA-Data)	24

. Forty-eight percent are distributed in an amount proportionate to the animal health research capacity of the eligible institutions in each State, relative to the total animal health capacity in all the States.

	Percent
Expenditures for Animal Health Research (Eligible Institution Data)	24
Scientist Years for Animal Health Research (Eligible Institution Data)	24

. Four percent are retained by the Department of Agriculture for administration, program assistance to the eligible institutions, and program coordination.

In a State with two or more eligible institutions, that State's allocation is distributed in the proportion that the animal health research capacities of these institutions bear to the total capacity of the State.

Eligible institutions must provide non-Federal matching funds in States receiving annual amounts in excess of $100,000 under this authorization. In FY 1989, $5,476,000 was distributed to 50 States and Puerto Rico in this program.

Current Activities

For FY 1988 a total of $5,191,248 was distributed to 50 States and Puerto Rico. Programs of research were received from all institutions. Funds were distributed to 39 Agricultural Experiment Stations, 12 Agricultural Experiment Stations and Colleges of Veterinary Medicine, and 16 separate Colleges of Veterinary Medicine.

Recommendations of the AHSRAB are being followed in CSRS program administration (i.e., scope and priorities of eligible research, determination of research capacity of eligible institutions, and other questions on program administration). In accordance with the advice of the Board, emphasis in this research centers on the solution of high-priority diseases or other health hazards in the production of livestock, poultry, and aquaculture species.

Research is in progress on about 500 projects seeking solutions to infectious diseases and parasitic problems of food animals and horses, with over 150 projects started in FY 1988. Strong emphasis is being placed on solutions to respiratory, enteric, and reproductive diseases. Other major problems such as mastitis, pseudorabies, bovine viral diarrhea, internal parasites, and toxicoses are being investigated. New or improved methods are being developed to control these diseases and other high-priority problems such as shipping fever, salmonellosis, bluetongue, and transmissible gastroenteritis. New biotechnology procedures including use of genetic engineering, monoclonal antibodies, virus fingerprinting, and subunit immunization are being employed to accelerate needed breakthroughs in diagnosis and prevention of animal pathogens.

Table 2 provides data on the amounts of Section 1433 funds that have been received annually by individual institutions from 1980 to 1989.

Special Research Grants in Animal Health, Section 1414 (c)(1)

Animal health research under the Special Research Grants Program has placed emphasis on the solution of problems of highest priority and national importance. Grants of up to $150,000 currently are made for funded projects--permitting indepth studies by some of the Nation's most highly trained, experienced, and productive animal health scientists. Projects are funded with a single grant and expenditures are permitted over a period of up to 5 years, depending upon budgets and work plans as presented in the proposal. This program is administered by the Cooperative State Research Service.

The AHSRAB determine eligible diseases and establish their priorities annually through recommendations from national livestock and poultry commodity organizations and other groups concerned with animal health. A competitive process with peer panel evaluation of proposals is used in the placement of all grants made under this program.

During the 11 years (1979-89) of competition in Animal Health Special Research Grants there has been a total submission of 4,632 proposals requesting over $550 million; 710 proposals have received awards totaling $51,704,863. Table 4 provides a summary of the awards listed by commodity and diseases. Data for FY 1979 include $505,756 of Special Research Grant funds awarded noncompetitively to 17 State Agricultural Experiment Stations as Supplementary Research Grants (table 3).

At the 1989 annual meeting, the Board reviewed the animal health priority lists that were submitted for its consideration by the principal national livestock commodity and veterinary medical organizations, and USDA recommendations. The Board then developed new guidelines for animal health research priorities that were recommended to CSRS for the Animal Health Special Grants Program for 1990. The Board recommended that the percentage of funds allocated for each commodity research category remain the same as in FY 1989 (table 4). The Board reviewed the specific eligible areas of inquiry under each commodity category of research and made the recommendations shown in Table 5.

Competitive Research Grants Office (CRGO)

Activities in CRGO involving animal research fell into three competitive research programs: Animal Molecular Biology and Brucellosis, Molecular and Cellular Mechanisms of Animal Growth and Development, and Animal Reproductive Physiology. Of the 1,408 proposals received by CRGO in FY 1989, 357 were submitted to these three programs. Approximately 42 percent of these applications had animal health implications. For all CRGO programs combined, a total of $37.25 million was awarded through 324 awards. Success rates on submitted proposals ranged from 13 percent to 28 percent depending on program area and budget availability. Seventy-five percent of the animal molecular biology program awards supported animal health research in the areas of virology, bacteriology, and immunology. About 29 percent of the growth and development projects contained health-related research in immunology. CSRS and CRGO program staffs coordinated closely to avoid duplicate funding of meritorious projects in the Animal Health Special Research Grants Program.

Hatch Act

Of the Hatch Act formula funds allocated to the State Agricultural Experiment Station system, approximately 6 percent, or $9 million, support animal health research. Types of Hatch Act-supported research include direct project support, regional research efforts in the animal health area, and other forms of base support to Veterinary Schools and Departments of Veterinary Science. This formula-funded program is administered at the local level by the director of the Agricultural Experiment Station and is designed to address local problems.

Evans-Allen Program

The Evans-Allen Program was initiated in 1967 to support agricultural research in the 1890 Colleges and Tuskegee University. Funding of animal health and disease research from Evans-Allen funds was approximately $224,000 in 1988.

Minor Use Drug Clearance Program (IR-4)

The IR-4 Project has received 177 animal drug requests (ADRs) from universities, government agencies, and producer organizations through the 4 regional offices (Northeastern, Northcentral, Southern, and Western). Forty animal drug requests have been established as active projects. These projects have been established with the cooperation of 19 universities; United States Department of Interior, Fish and Wildlife Service; USDA, Agricultural Research Service; National Board of Fur Organizations, and 18 pharmaceutical companies. There was an increase of 16 new animal drug requests in 1989. Approximately 70 percent (92 ADRs) of the remaining 132 ADRs are considered valid projects to be funded. There are 13 public master files (PMFs) published in the Federal Register. Five public master files are under review by the Center for Veterinary Medicine (Food and Drug Administration). Seven projects completed on the public master files are in preparation and 15 animal drug projects are ongoing.

TABLE 1

ANIMAL HEALTH RESEARCH FUNDS 1979-89 - Actual Distribution*

Item	FY 1979	FY 1980	FY 1981	FY 1982	FY 1983	FY 1984	FY 1985	FY 1986	FY 1987	FY 1988	FY 1989
						Dollars					
Formula Funds (Sec. 1433)	5,000	6,000	6,500	5,760	5,760	5,760	5,760	5,191	5,191	5,191	5,191
Special Research Animal Health	10,000	7,000	5,050	7,156	7,156	7,156	6,000	5,408	5,408	5,408	5,408
Minor Use Animal Drugs	0	0	0	240	240	240	240	217	217	217	217
Total	15,000	13,000	11,550	13,156	13,156	13,156	12,000	10,828	10,828	10,828	10,828

* Total dollars appropriated by Congress, less 4 percent for federal administration costs, less 1.25 percent of adjusted amount for the Small Business Innovation Research Program.

Table 2
ANIMAL HEALTH (Section 1433) FUND ALLOCATIONS (in dollars)
FY 1980 to 1989

AES = Agricultural Experiment Station
SVM = Schools and Colleges of Veterinary Medicine
* = AES and SVM combined

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
ALABAMA										
AES, Auburn Univ.	104,005	108,063	89,645	88,463	84,301	86,828	75,960	76,229	70,585	59,229
SVM, Auburn Univ.	27,320	23,668	21,560	21,006	22,391	29,764	32,714	32,829	42,899	46,277
SVM, Tuskegee Univ.	24,325	26,886	20,435	21,103	16,454	10,998	5,932	5,953	3,703	5,220
ALASKA										
AES, Univ. of AK	9,602	11,589	12,503	15,053	13,924	9,318	8,930	8,948	9,993	11,937
ARIZONA										
AES, Univ. of AZ	66,874	73,426	60,007	59,239	54,686	57,164	56,615	57,238	61,041	59,201
ARKANSAS										
AES, Univ. of AR	83,340	91,359	81,957	81,621	79,001	78,085	72,216	73,241	73,869	73,641
CALIFORNIA										
AES, U. of CA-Berk	218,204	232,257	203,790	212,367	226,345	245,028	235,486	237,542	236,012	226,815
SVM, U. CA-Dav	85,821	160,537	177,166	199,317	188,341	196,346	183,479	185,029	178,737	158,598
COLORADO										
AES, CO State Univ.	*232,980	*260,767	276,285	*260,477	*262,454	*230,633	*250,439	*252,333	236,815	241,605
SVM, CO State Univ.										
CONNECTICUT										
AES, U. of CT-Storrs	16,840	17,924	20,041	22,256	24,065	23,806	22,348	22,488	23,315	22,604
DELAWARE										
AES, U. of Delaware	14,901	16,814	17,401	16,776	16,187	14,380	15,091	15,694	17,144	18,703
FLORIDA										
AES, Univ. of FL	94,598	98,792	82,307	81,509	79,028	82,885	77,199	77,386	82,091	82,451
SVM, Univ. of FL	14,011	15,811	15,821	23,915	34,538	49,013	59,707	59,851	75,341	84,503

Table 2, Continued

GEORGIA	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
AES, U. of GA	46,979	49,398	40,281	37,903	33,989	29,647	22,818	22,722	20,374	21,133
SVM, U. of GA	130,171	137,082	124,516	130,479	136,986	143,203	129,422	128,880	125,952	118,666
HAWAII										
AES, U. of HI	8,481	9,156	8,341	8,458	8,314	7,943	7,482	7,308	7,102	7,992
IDAHO										
AES, U. of ID	73,323				71,230	64,687	53,990	53,654	45,306	44,042
SVM, U. of ID	27,517	*104,670	*85,447	*82,667	13,487	15,638	19,085	18,965	21,078	23,398
ILLINOIS										
SVM, U. of IL	*200,909	*200,150	*167,905	164,312	171,958	*179,934	169,195	*167,401	*163,337	163,163
INDIANA										
SVM, Purdue U.	*131,077	*141,379	*120,908	*123,647	*123,794	*123,252	109,865	*109,459	*103,382	100,047
IOWA										
AES, IA St. U.	35,405	42,338	51,691	64,009	70,018	67,881	59,179	56,794	51,920	48,065
SVM, IA St. U.	311,942	326,415	280,350	261,622	254,464	285,524	247,015	236,975	233,472	227,293
KANSAS										
SVM, KS State U.	*194,993	*206,457	*185,103	*186,541	*190,193	*184,651	*172,068	*175,000	*171,953	169,149
KENTUCKY										
AES, U. of KY	107,071	109,265	93,303	98,340	98,166	98,092	92,813	92,429	93,477	90,699
LOUISIANA										
AES, LA St. U.	101,978	110,564	94,090	89,607	84,321	80,562	73,044	73,051	69,563	62,751
SVM, LA St. U.,	11,489	15,512	17,501	25,013	30,105	30,042	25,012	25,014	20,949	27,177
MAINE										
AES, U. of ME	23,455	25,046	24,622	22,675	2,012	18,102	16,108	16,074	16,174	16,254
MARYLAND										
AES, U. of MD	64,442	68,862	54,976	57,058	50,065	48,548	46,140	46,867	46,496	45,714
Johns Hopkins U.	15,787	15,584	10,449	0	0	0		0	0	0

Table 2, Continued

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
MASSACHUSETTS										
AES, Univ. of MA	23,705	21,738	16,945	15,670	12,126	10,620	9,695	9,676	12,501	13,792
SVM, Tufts Univ.	0	28,052	36,068	36,849	56,192	51,016	43,757	43,670	29,079	28,419
MICHIGAN										
AES, MI St. Univ.		91,319	68,783							
SVM, MI St. Univ.	*148,301	51,366	47,294	*110,149	*107,814	*103,969	95,376	*96,236	96,417	97,935
MINNESOTA										
AES, U. of MN	81,970	84,055	76,364	70,268	74,718	82,115	84,221	82,919	89,310	87,540
SVM, U. of MN	125,357	144,017	124,668	132,156	123,487	111,182	94,497	93,043	81,888	83,945
MISSISSIPPI										
AES, MS St. U.	*75,867	*81,045	*76,879	69,523	62,566	*52,007	50,876	*51,331	*60,018	69,522
MISSOURI										
AES, U. of MO	75,175	66,293	45,869	42,073	61,934	73,452	54,115	53,153	37,493	44,426
SVM, U. of MO	87,841	121,398	123,728	121,225	93,589	67,853	93,453	91,790	119,934	126,797
MONTANA										
AES, MT St. U.	106,421	111,624	89,650	83,889	77,041	77,156	78,952	79,178	81,297	79,449
NEBRASKA										
AES, U. of NE	180,942	203,947	184,801	190,134	191,682	193,987	180,744	184,74	178,693	177,438
NEVADA										
AES, U. of NV	30,751	30,547	23,947	21,672	18,647	17,365	17,280	17,629	19,664	23,276
NEW HAMPSHIRE										
AES, U. of NH	16,872	16,206	12,753	12,482	11,678	11,190	10,135	10,100	10,279	9,698
NEW JERSEY										
AES, Rutgers U.	31,407	32,008	27,466	28,707	26,715	26,978	21,357	21,308	21,863	21,747
NEW MEXICO										
AES, NM St. U.	49,104	50,407	43,831	39,389	38,421	41,159	40,068	40,874	41,400	38,618
NEW YORK										
AES, Cornell U.	24,621	38,475	43,554	51,701	50,473	51,250	54,007	53,703	58,868	70,579
SVM, Cornell U.	203,053	223,216	188,889	199,730	206,594	221,233	212,026	210,833	216,398	226,462

Table 2, Continued

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
NORTH CAROLINA										
AES, NC St. U.	*125,158	*126,026	*101,339	*97,640	*97,193	*100,061	*100,096	*102,061	*110,548	111,112
NORTH DAKOTA										
AES, ND St. U.	67,213	69,565	57,879	56,734	57,644	58,502	56,150	56,580	55,854	55,690
OHIO										
AES, OH St. U.	98,576	89,550	65,621	61,952	64,874	70,716	69,994	70,441	78,069	82,326
SVM, OH St. U.	51,921	60,966	69,974	70,324	70,147	53,379	46,557	46,857	35,292	29,447
OKLAHOMA										
AES, OK St. U.	148,637	157,722								
SVM, OK St. U.	6,145	5,066	*130,813	*129,962	*123,764	*125,298	111,228	*111,547	110,553	109,810
OREGON										
AES, OR ST. U.	58,795	66,998	63,963	68,444	62,117	53,015	47,354	47,615	54,274	55,257
SVM, OR St. U.	54,244	59,314	50,978	40,850	37,633	42,804	43,533	43,774	41,113	36,832
PENNSYLVANIA										
AES, U. of PA	67,793	64,985	55,225	52,832	52,447	52,337	52,983	52,638	58,668	68,435
SVM, U. of PA	74,501	97,406	105,426	117,555	119,287	108,886	95,497	94,875	86,648	79,150
Lehigh Univ.	2,791	0	0	0	0	0	0	0	0	0
PUERTO RICO										
AES, U. of PR	19,280	16,935	16,008	16,418	15,292	14,543	13,217	13,218	12,508	12,385
RHODE ISLAND										
AES, U. of RI	12,199	15,231	12,658	13,549	14,402	14,910	12,428	12,413	9,640	6,599
SOUTH CAROLINA										
AES, Clemson U.	28,671	28,397	23,241	23,012	23,754	23,555	21,680	21,802	21,305	21,600
SOUTH DAKOTA										
AES, SD St. U.	118,702	125,871	109,615	105,878	101,127	96,112	88,582	87,493	90,515	89,816
TENNESSEE										
AES, U. of TN	*73,301	*82,137	*73,990	*76,904	*74,629	*70,441	*62,737	*63,243	63,812	66,245
SVM, U. OF TN										
TEXAS										
AES, TX A&M U.	*425,692	*436,027	*343,157	*319,658	*331,193	*346,564	*347,878	*350,953	355,803	367,752
SVM, TX A&M U.										

Table 2, Continued

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
UTAH										
AES, UT St. U.	52,768	60,889	61,031	61,301	60,935	57,344	49,812	49,863	46,344	45,277
VERMONT										
AES, U. of VT	19,305	19,674	17,148	18,253	18,977	18,298	16,664	16,345	16,505	17,627
VIRGINIA										
AES, VPI & SU	*85,377	*95,619	*86,636	*90,487	*84,512	*90,624	*83,696	*85,449	*93,564	98,668
SVM, VPI & SU										
WASHINGTON										
AES, WA St. U.	37,457	35,524	28,038	27,741	30,950	34,631	35,171	35,206	39,857	41,618
SVM, WA St. U.	94,349	115,483	110,128	115,258	111,666	116,010	104,469	104,571	101,345	91,277
WEST VIRGINIA										
AES, WV Univ.	21,579	23,531	18,317	17,463	16,035	16,267	14,165	14,216	13,317	12,579
WISCONSIN										
AES, U. of WI	225,816	239,723	215,841	*212,814	*213,497	*208,846	*196,921	*193,910	195,945	192,830
SVM, U. of WI										
WYOMING										
AES U. of WY	50,106	51,986	43,044	42,162	42,203	43,265	40,525	40,539	42,587	42,946
TOTAL	5,760,000	6,240,000	5,529,600	5,518,541	5,496,422	5,474,304	5,476,000	5,191,248	5,191,248	5,191,248

TABLE 3

ANIMAL HEALTH SPECIAL RESEARCH GRANTS AWARDS
FISCAL YEARS 1979-1989

Commodity and Disease	1979-1986 Projects	1979-1986 Funds	1987 Projects	1987 Funds	1988 Projects	1988 Funds	1989 Projects	1989 Funds	Total Projects	Total Funds
BEEF CATTLE										
Respiratory Diseases	63	$7,987,173	7	$994,418	10	$1,235,788	2	$249,976	82	$10,467,355
Reproductive Diseases (including Anestrus)	35	4,337,714	5	611,584	4	502,030	2	269,467	46	5,720,795
Enteric Diseases	34	3,376,148	0	0	2	245,000	3	332,959	39	3,954,107
Metabolic Diseases	6	571,305	1	134,955	0	0	1	125,000	8	831,260
Toxicosis	5	456,162	0	0	0	0	0	0	5	456,162
Bluetongue	7	893,402	0	0	3	377,155	0	0	10	1,270,557
Internal Parasites	22	2,375,088	1	135,418	1	135,418	1	110,000	26	2,886,489
External Parasites	12	1,092,951	0	0	0	0	0	0	14	1,284,525
Other Diseases	2	100,920	0	0	0	0	0	0	2	100,920
SUBTOTAL	186	$21,190,863	14	$1,876,375	23	$2,817,530	9	$1,087,402	232	$26,972,170

Table 3, Continued

ANIMAL HEALTH SPECIAL RESEARCH GRANTS AWARDDS

Fiscal Years 1979-1989

Commodity and Disease	1979-1986 Projects	1979-1986 Funds	1987 Projects	1987 Funds	1988 Projects	1988 Funds	1989 Projects	1989 Funds	Total Projects	Total Funds
DAIRY CATTLE										
Mastitis	39	$3,622,688	3	$320,916	2	$265,557	1	$120,000	45	$3,969,161
Respiratory Diseases	13	1,113,835	1	87,250	0	0	6	541,290	20	1,742,375
Reproductive Diseases (including Anestrus)	26	2,889,379	2	300,000	0	0	7	842,742	35	4,032,121
Enteric Diseases	15	1,334,679	4	454,404	0	0	3	148,343	22	1,937,426
Metabolic Diseases	7	646,947	1	144,142	1	100,000	1	125,000	10	1,016,089
Bluetongue	1	132,414	0	0	0	0	0	0	1	132,414
Internal Parasites	2	73,245	0	0	0	0	0	0	2	73,245
External Parasites	1	58,500	0	0	0	0	0	0	1	58,500
Other Diseases	4	384,260	0	0	0	0	0	0	4	384,260
SUBTOTAL	108	$9,895,947	11	$1,306,712	3	$365,557	18	$1,777,375	108	$9,895,947

Table 3, Continued

ANIMAL HEALTH SPECIAL RESEARCH GRANTS AWARDS
Fiscal Years 1979-1989

Commodity and Disease	1979-1986 Projects	1979-1986 Funds	1987 Projects	1987 Funds	1988 Projects	1988 Funds	1989 Projects	1989 Funds	Total Projects	Total Funds
POULTRY										
Respiratory Diseases	44	$3,173,054	4	$411,500	5	$398,333	5	$322,378	58	$4,305,265
Skeletal Diseases	6	675,491	0	0	0	0	1	85,489	7	760,980
Enteric Diseases	12	909,609	1	113,185	1	79,751	1	89,909	15	1,212,454
Neoplastic Diseases (Incl. Marek's Dis.)	7	484,302	0	0	0	0	1	135,000	8	619,302
Internal Parasites	4	405,782	0	0	1	68,432	0	0	4	405,782
Toxicosis	4	355,428	0	0	0	0	0	0	4	344,428
Other Diseases	6	687,092	2	158,399	2	225,000	0	0	10	1,070,491
SUBTOTAL	83	$6,690,758	7	$703,084	8	$703,084	8	$632,776	106	$8,729,702

Table 3, Continued

ANIMAL HEALTH SPECIAL RESEARCH GRANTS AWARDS
Fiscal Years 1979-1989

Commodity and Disease	1979-1986 Projects	1979-1986 Funds	1987 Projects	1987 Funds	1988 Projects	1988 Funds	1989 Projects	1989 Funds	Total Projects	Total Funds
SHEEP & GOATS										
Respiratory Diseases	3	$286,426	1	$ 90,375	1	$138,785	2	$ 80,000	7	$595,586
Predator Control	6	382,404	0	0	0	0	0	0	6	382,404
Reproductive Diseases	4	250,920	0		0	0	0	0	4	250,920
Bluetongue	4	402,326	1	150,000	1	0	0	0	5	552,316
Caseous Lymphadenitis	4	391,368	0	0	1	0	0	0	4	391,368
Contageous Ecthyma	1	147,063	0	0	0	0	0	0	1	147,063
Internal Parasites	6	480,056	0	0	0	0	0	0	6	480,056
Other Diseases	6	462,785	1	30,042	2	$131,632	2	$190,417	13	1,055,251
SUBTOTAL	34	$2,803,338	3	$270,417	3	$270,417	4	$270,417	44	$3,854,964

Table 3, Continued

ANIMAL HEALTH SPECIAL RESEARCH GRANTS AWARDS
Fiscal Years 1979-1989

Commodity and Disease	1979-1986 Projects	1979-1986 Funds	1987 Projects	1987 Funds	1988 Projects	1988 Funds	1989 Projects	1989 Funds	Total Projects	Total Funds
SWINE										
Enteric Diseases	36	$2,868,466	4	$459,172	3	$446,390	5	$533,202	48	$4,307,230
Respiratory Diseases	17	1,775,720	2	275,852	2	254,267	5	350,000	26	2,655,839
Reproductive Diseases	10	1,012,980	2	246,311	2	130,705	0	0	14	1,389,996
Pseudorabies	8	1,084,709	0	0	0	0	0	0	8	1,084,709
MMA	9	777,713	0	0	0	0	0	0	9	777,713
Internal Parasites	8	643,000	0	0	1	149,973	0	0	9	792,973
External Parasites	2	187,980	0	0	0	0	0	0	2	187,980
Toxicosis	8	611,963	0	0	0	0	0	0	8	611,963
Skeletal Diseases (Lameness)	4	320,386	0	0	0	0	0	0	4	320,386
SUBTOTAL	102	$9,282,917	8	$981,335	8	$981,335	10	$883,202	128	$12,128,789

Table 3, Continued

ANIMAL HEALTH SPECIAL RESEARCH GRANTS AWARDS
Fiscal Years 1979-1989

Commodity and Disease	1979-1986 Projects	1979-1986 Funds	1987 Projects	1987 Funds	1988 Projects	1988 Funds	1989 Projects	1989 Funds	Total Projects	Total Funds
HORSES										
Respiratory Diseases	11	$853,690	0	0	0	0	0	0	11	$853,690
Enteric Diseases	3	231,255	2	162,250	2	162,250	2	100,000	9	655,755
Musculoskeletal Diseases	4	466,000	0	0	0	0	0	0	4	466,000
Internal Diseases	3	284,315	0	0	0	0	1	0	4	346,565
SUBTOTAL	21	$1,835,260	2	$162,250	2	$162,250	3	$162,250	28	$2,322,010

Table 3, Continued

ANIMAL HEALTH SPECIAL RESEARCH GRANTS AWARDS
Fiscal Years 1979-1989

Commodity and Disease	1979-1986 Projects	1979-1986 Funds	1987 Projects	1987 Funds	1988 Projects	1988 Funds	1989 Projects	1989 Funds	Total Projects	Total Funds
AQUACULTURE										
Infectious Diseases	16	$1,079,347	2	$108,167	2	$108,167	2	$108,167	22	$1,403,848
Parasites	2	170,777	0	0	0	0	0	0	2	170,777
SUBTOTAL	18	$1,250,124	2	$108,167	2	$108,167	2	$108,167	24	$1,574,625

Table 3, Continued

ANIMAL HEALTH SPECIAL RESEARCH GRANTS AWARDS
Fiscal Years 1979 - 1989

Commodity and Disease	1979 - 1986 Projects	1979 - 1986 Funds	1987 Projects	1987 Funds	1988 Projects	1988 Funds	1989 Projects	1989 Funds	Total Projects	Total Funds
SALMONELLA										
Bovine	*		*		*		1	$111,751	1	$111,751
Poultry	*		*		*		5	375,000	5	375,000
SUBTOTAL							6	$486,751	6	$486,751

* No data available

Table 3, Continued

ANIMAL HEALTH SPECIAL RESEARCH GRANTS AWARDS
Fiscal Years 1979-1989

Commodity and Disease	1979-1986 Projects	1979-1986 Funds	1987 Projects	1987 Funds	1988 Projects	1988 Funds	1989 Projects	1989 Funds	Total Projects	Total Funds
TOTAL RESEARCH FOR ALL COMMODITIES -	552	$52,949,207	47	$5,648,715	50	$5,448,340	62	$4,970,234	709	$69,016,496

Table 4

ANIMAL HEALTH SPECIAL RESEARCH GRANTS
Fiscal Year 1989

AREA	NUMBER OF PROPOSALS	PROPOSALS FUNDED	SUCCESS RATE(%)	AMOUNT REQUESTED	AMOUNT GRANTED	COMMODITY	
BEEF AND DAIRY CATTLE							
Reproductive Diseases	47	7	15	$6,447,120	$791,266	Beef	$541,290
						Dairy	249,976
Respiratory Diseases	34	10	29	4,437,863	1,112,209	Beef	842,742
						Dairy	269,467
Enteric Diseases	20	6	30	2,945,224	481,302	Beef	332,959
						Dairy	148,343
Metabolic Diseases	12	2	17	1,618,636	250,000	Beef	125,000
						Dairy	125,000
Parasitic Diseases	10	1	10	1,397,221	110,000	Beef	110,000
						Dairy	0
Mastitis	16	1	6	1,997,165	120,000	Beef	0
						tot. cattle	2,864,777
SWINE							
Enteric Diseases	19	5	26	2,674,764	533,202		
Respiratory Diseases	18	5	28	2,280,482	350,000		
Reproductive Diseases	6	0	0	703,494	0		
Metabolic & Musculo-Skeletal Diseases	5	0	0	591,020	0		
Parasitic Diseases	3	0	0	379,500	0		
						total	883,202
POULTRY							
Respiratory Diseases	23	5	22	2,599,131	322,378		
Metabolic & Immunologic Diseases	12	1	8	1,634,725	135,000		
Enteric Diseases	3	1	33	212,804	89,909		
Musculo-Skeletal Diseases	4	1	25	686,341	85,489		
						total	632,776
SHEEP & GOATS	13	4	31	1,865,101	270,417	total	270,417
HORSES	21	3	14	2,589,629	162,250	total	162,250
AQUACULTURE	21	4	19	1,458,137	108,167	total	108,167
SALMONELLA	22	6	27	3,430,659	486,751	total	486,751
TOTAL	309	62	18%	$36,417,982	$5,408,340		$5,408,340

Table 5

Specific Areas and Appropriate Percentages
Recommended for Funding in Special Grants

COMMODITY	PERCENT OF FUNDS
Beef Cattle	41
Respiratory diseases	
Reproductive diseases	
Digestive and enteric diseases (including Samonellosis)	
Parasitic diseases	
Metabolic diseases with no specific diseases identified as high priority	
Dairy Cattle	18
Mastitis	
Reproductive diseases	
Respiratory diseases	
Digestive and enteric diseases (including Salmonellosis)	
Metabolic diseases with no specific diseases identified as high priorities	
Swine	18
Enteric diseases (including Salmonellosis)	
Respiratory diseases	
Reproductive diseases	
Metabolic and musculoskeletal diseases	
Parasitic diseases	
Poultry	13
Respiratory diseases	
Metabolic and immunologic diseases	
Enteric diseases (Special emphasis on *Salmonella enteritidis* in turkeys and chickens)	
Skeletal diseases	
Sheep and Goats	5
Musculoskeletal diseases	
Respiratory diseases	
Digestive and enteric diseases	
Internal parasitic diseases with no specific diseases identified as high priorities	
Horses	3
Respiratory diseases	
Digestive and enteric diseases	
Reproductive diseases	
Musculoskeletal diseases with no specific diseases identified as high priorities	
Aquaculture	2
Infectious diseases	
Parasitic diseases	